

## METHODOLOGY

1. **Data Sources:** Utilizing the list of *Validated Archival Indicators of Risk and Outcome Variables that Predict Problem Behavior* and the definitions provided by the Center for Substance Abuse Prevention (CSAP) at SAMHSA, appropriate data were collected from existing records of state, county, and other governmental agencies. The specific data source for each social indicator was indicated on the page reporting the frequency of the social indicator within the state, as well as in the Data Definitions section of this report.
2. **Data Collection Methods:** Data were obtained electronically, whenever possible. Some data did, however, have to be transferred from a hard copy to an electronic database. A format for entering the social indicator data into a database was completed; all specific geographic coding received with the data set was maintained.
3. **Calculation of Population Frequency (Rates):** Most of the requested social indicator variables required that a frequency or rate be calculated, e.g. juvenile arrest rate for alcohol violations per 100,000 juveniles. This calculation required that an appropriate denominator be associated with the appropriate numerator. The numerator was the number of events identified from the data set for the appropriate age range, gender, and geographic unit. The denominator was the estimated number of persons of the same age range, gender, and geographic unit who were potentially at risk, i.e. lived in that area during the same time period.

Population Estimates: Population estimates were required for the following age groups for each county and community included in the report: Ages 10-14, Ages 10-17, Ages  $\geq 18$ .

For all 2000 data, the all county and community population estimates for the various age groups were obtained from the United States Census 2000 website ([www.census.gov](http://www.census.gov)). These were the estimates also approved for use by the Department of Economic Security (DES) and Arizona Department of Health Services (ADHS). The denominator data for each county, community, and age group may be found in table format at the end of the Data Definitions Section.

Age-category specific population estimates for 2001 data were more problematic. Available age-specific population estimates available from DES at the county and community level were based on projections from the 1990 census and had not been redeveloped based on the 2000 census. Furthermore, revised estimates were not being planned. While the census had revised total population estimates for 2001, they did not develop revised age-specific population estimates. In consultation with the Office of Vital Statistics at ADHS, we constructed a set of 2001 population estimates for the appropriate age groups for each county and community using the age-specific population distribution from the 2000 census data and the 2002 revised total community and county population estimates. These final denominator estimates may be found in table format at the end of the Data Definitions Section.

**Confidence Intervals:** For most of the county-level and state-level indicators, 95% confidence intervals were calculated around the rate. All calculations were made using Stata software, version 6 and assumed the Poisson distribution. It should be noted that for those indicators that could incorporate negative change, e.g. net migration, the underlying formulas did not allow the interval to overlap zero.

4. **Geographic Areas Sampled:** In order to provide consistent geographical reporting of the social indicator data across the state, the population frequency (rates) for each indicator were estimated for each county and the overall state. Not all data sets included sufficient information for estimation of the frequency of the indicator for geographic areas smaller than a county, e.g. community. Also, the numbers of events were extremely low for some indicators (e.g. adolescent suicide), making rate estimation inappropriate. Furthermore, some jurisdictions, e.g. South Tucson, were not recognized geographical units within each data source. These analyses would require further assumptions and interpolation to construct the smaller jurisdiction rates.
5. **Standard definitions:** The standard definitions specified in the previous contract by SAMSHA were used whenever possible. All definitions are listed in the Data Definitions section at the end of this report. Final definitions are also reported at the bottom of the each table reporting the statewide frequency of the social indicator and are labeled “ADHS Definition” in the Data Definitions section of this report.

6. **Graphic Presentations:** For each social indicator, state maps were created to graphically represent the frequency of the social indicator throughout the state. ARCVIEW software was used to develop these maps. The maps provided a visual description of the ranking of the counties throughout the state for each social indicator. The z-score (or standard deviation from the mean of all 15 counties) was used to develop these maps. Arcview categorizes the individual county scores by their relative distance from the county mean. In the maps, shades of red represent counties above the mean of the 15 counties and shades of blue represent counties below the mean.
7. **Z-scores:** For this report, this score is the standard deviation for each county of the social indicator rate from the mean of all of the county experiences (all-counties mean). It was calculated as:

$$(\text{county rate} - \text{all-counties mean}) / \text{standard deviation of the all-counties mean}$$

Conversion of the individual county rates for each variable to z-scores produces a score distribution with a mean of 0.00 and a standard deviation of 1.00. This score allows meaningful comparisons between multiple variables that may, in their unconverted forms, display widely varying means and standard deviations, making comparison across counties and across variables difficult.

For this z-score calculation, the all-counties mean represents the mean value of the 15 Arizona county data points (i.e., the all-counties mean); it has a value in z-score metric, as stated above, of 0.00. An indicator z-score of +/- 1.00 represents then a value that is a single standard deviation from the county mean, with a z-score of positive 1.00 representing a value one standard deviation above the all-counties mean, and a z-score of negative 1.00 representing a value one standard deviation below the all-counties mean.

8. **County Profiles:** Risk profiles were developed for each county to summarize the experience of that county for the set of social indicators. The first page of the profiles lists the specific county rates for each indicator and the overall Arizona rate for the same time period. The second page of profiles consists of graphs that display the degree to which the county rates vary from the experience of all of the state counties (the standard variance above or below the mean of the state 15 counties for each indicator). These graphs used the z-score defined above.

9. **Changes in Variables from Prior Reports:** Several issues arose for this report. These are described within the Data Definitions Section; however, further note should be made of these problems.

- **Tobacco Sales Outlets:** This variable was only collected for 1998 and does not appear to be routinely collected at smaller geographical areas for other time periods.
- **Net Migration:** This variable was not made available to us by the original reporting source. For further information, we refer you to the agency.
- **Free and Reduced Lunch Program:** In the 1997 and 1999 report, information from only public schools were included. To calculate this list, however, several data sets were needed and not readily translatable to electronic format, making a cumbersome and time-consuming process. Using data from 1999, we observed a high correlation ( $r=0.97$ ) between the variable 'percent of free & reduced lunch students' as calculated including only public schools compared to all schools. For the 2000 and 2001 report, we modified the variable to include information from all programming and schools.
- **TANF** – These data were available for the 1999 report; however, it was not feasible for the state agency to collate the information for 2000 for small geographic areas as well as to provide similar information for the Food Stamp program. The agency did provide data for Food Stamps. Using the 1999 data, we estimated that there was high correlation between these two variables,  $r=.95$ .
- **Alcohol Related Traffic Fatalities:** The Fatality Analysis Reporting System (FARS) modified their definition of 'alcohol related accidents' in 2000. The data that were received did not allow a re-estimation for 1997 and 1999 using the new criteria. Beginning in 2000, FARS used a blood alcohol content (or BAC)  $\geq 0.1$  to define alcohol-related event.
- **Children Living in Foster Care:** This data were not made available to us for annual year 2000.
- **Domestic Violence:** This variable was not included in this report since only a few communities and agencies within Arizona regularly reported this information on a voluntary basis to the Governor's Council. This inconsistency of reporting made comparisons across communities and counties unreliable.

## **References Used in Report**

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